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DOI:

[10.1016/j.jpsychores.2016.03.203](https://doi.org/10.1016/j.jpsychores.2016.03.203)

Document Version

Peer reviewed version

[Link to publication record in King's Research Portal](#)

Citation for published version (APA):

Strawbridge, R., Sartor, M-L., Young, A. H., & J Cleare, A. (2016). Is chronic fatigue syndrome an inflammatory disorder? *Journal of Psychosomatic Research*, 85, 82. <https://doi.org/10.1016/j.jpsychores.2016.03.203>

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Is chronic fatigue syndrome an inflammatory disorder?

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Abstract

Aims

Chronically elevated inflammation provides a putative target in the search of a meaningful biomarker for chronic fatigue syndrome (CFS). While research has investigated levels of inflammatory biomarkers in people with CFS compared with healthy controls, these groups have not yet been examined at a meta-analytic level. To evaluate the degree and direction of these associations, we identified the existing evidence and combined these.

Methods

A systematic review sought studies that compared levels of inflammatory proteins in people with a diagnosis of CFS. Using data from the included studies, meta-analyses compared levels of biomarkers measured in at least four studies.

Results

48 studies were included following the systematic search, and thirteen biomarkers were examined in analyses. Tumor necrosis factor-alpha (TNFα), transforming growth factor-beta (TGFβ), c-reactive protein (CRP), interleukins 2 (IL-2), 4 (IL-4), 1-beta (IL-1β) and 12 (IL-12) were elevated in people with CFS compared to controls; the remaining biomarkers (IFNγ, IL-1α, IFNα, IL-8, IL-10 and IL-6) were not different between the two populations.

Conclusions

It is not possible at this stage to elucidate whether high inflammation in CFS is of primary pathophysiological importance or secondary to other factors (e.g. stressful experiences, sleep disturbances, physical deconditioning, endocrinological changes), and the role of inflammatory alterations in treatment is not addressed by these analyses. However, these results have potentially important implications for the understanding, classification and treatment for CFS, pending further investigations of inflammatory mechanisms.